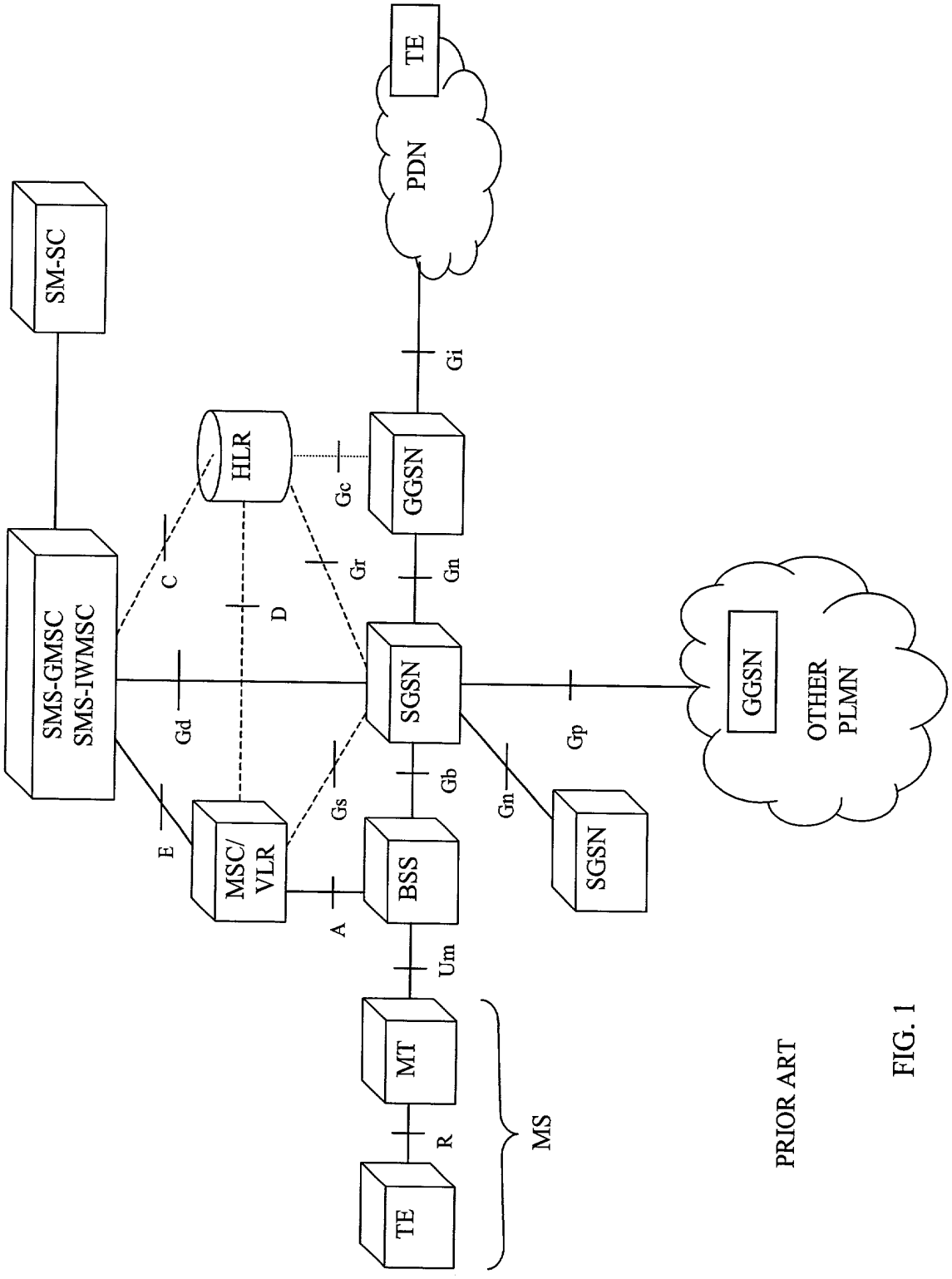
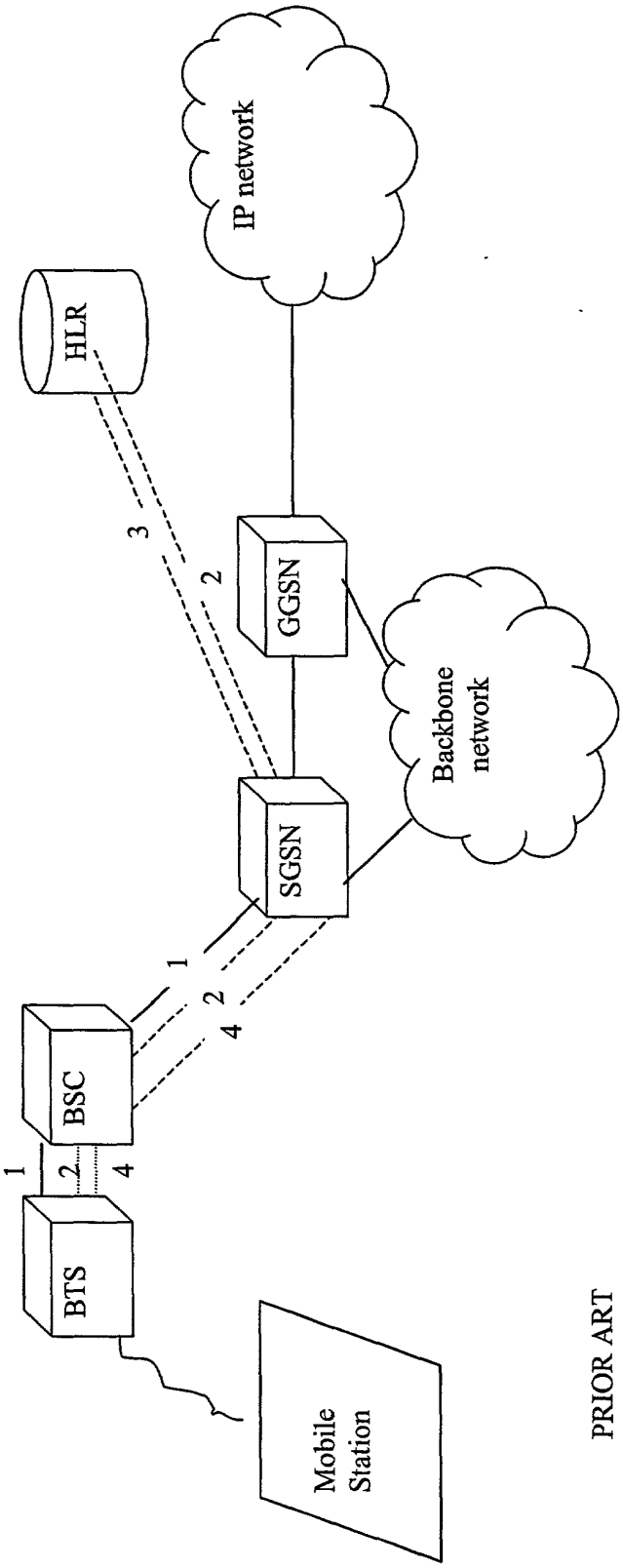


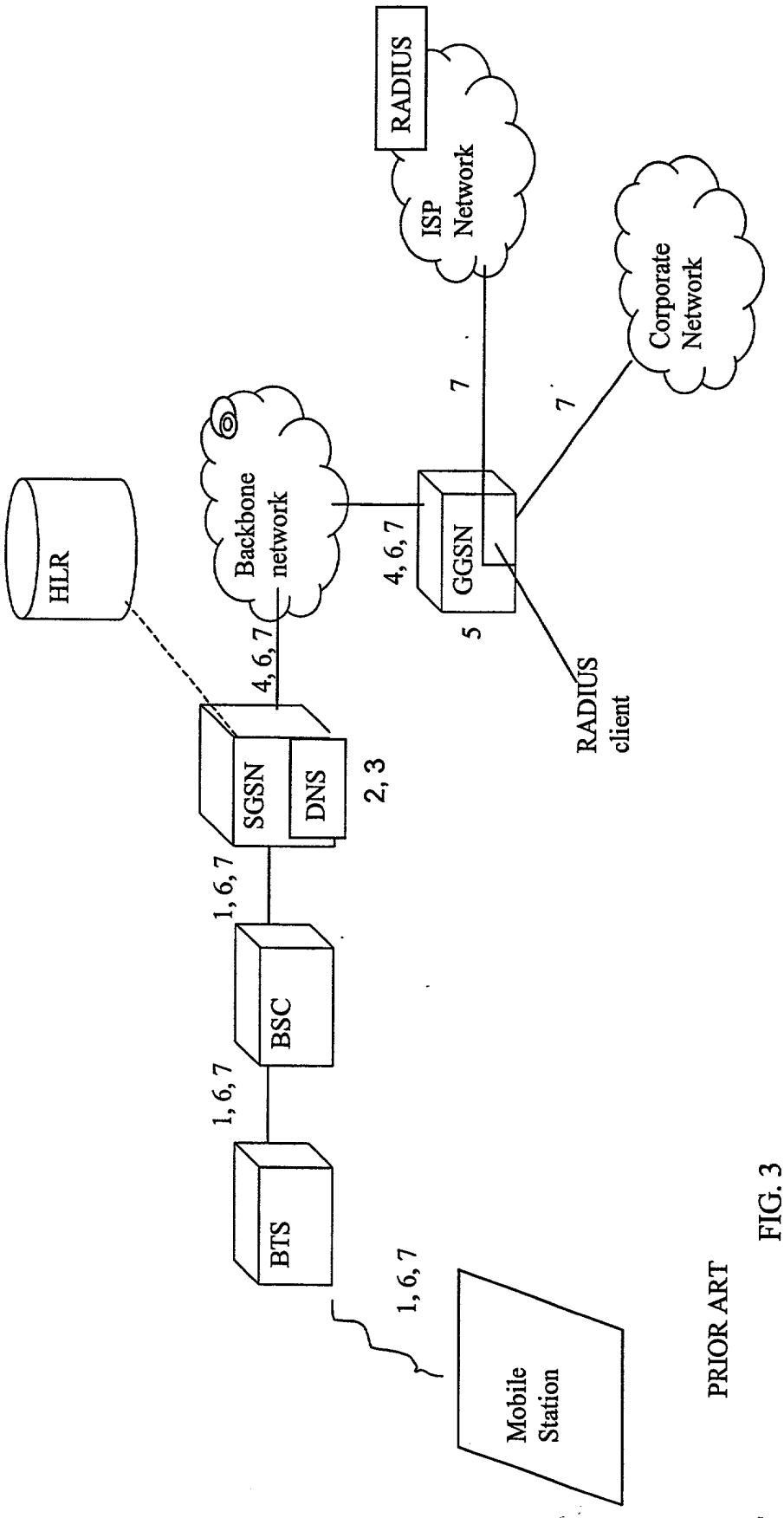
PRIOR ART

FIG. 1



PRIOR ART

FIG. 2



PRIOR ART

FIG. 3

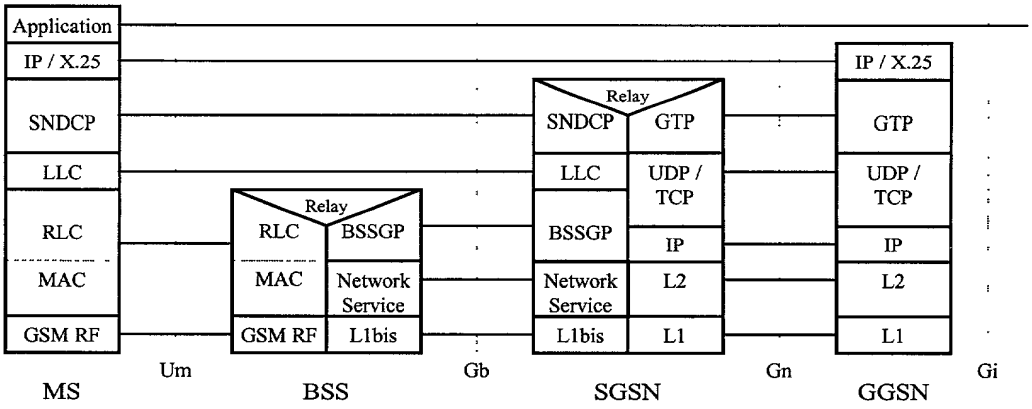

Application
IP / X.25
SNDCP
LLC
RLC
MAC
GSM RF
Relay
RLC
BSSGP
MAC
Network Service
GSM RF
L1bis
Relay
SNDCP
GTP
LLC
UDP / TCP
BSSGP
IP
Network Service
L2
L1bis
L1
IP / X.25
GTP
UDP / TCP
IP
L2
L1
Um
Gb
Gn
Gi
MS
BSS
SGSN
GGSN

FIG. 4

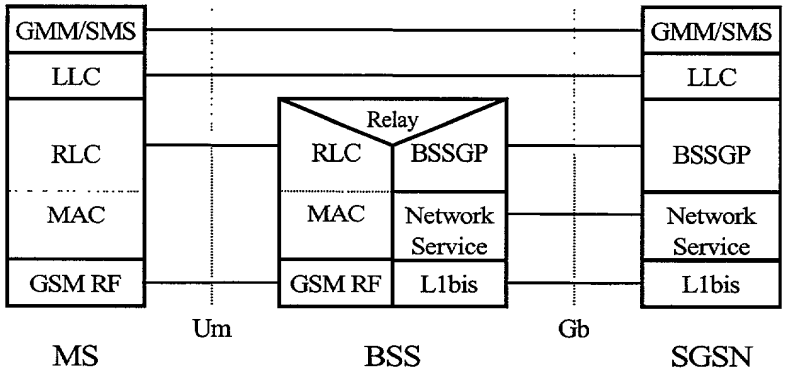

GMM/SMS
LLC
RLC
MAC
GSM RF
Relay
RLC
BSSGP
MAC
Network Service
GSM RF
L1bis
GMM/SMS
LLC
BSSGP
Network Service
L1bis
Um
Gb
MS
BSS
SGSN

FIG. 5

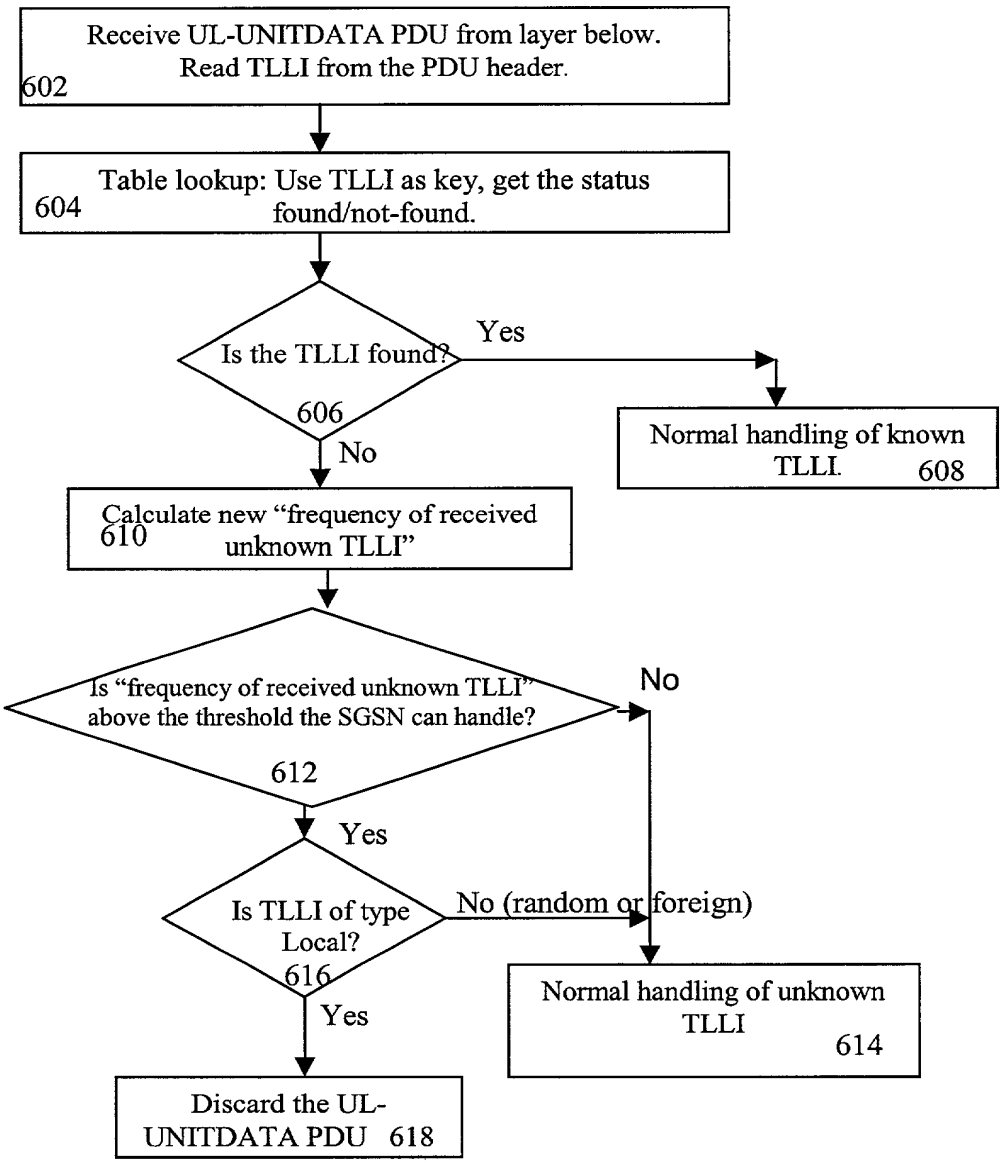

Receive UL-UNITDATA PDU from layer below. Read TLLI from the PDU header.
602
Table lookup: Use TLLI as key, get the status found/not-found.
604
Is the TLLI found?
606
Yes
Normal handling of known TLLI.
608
No
Calculate new "frequency of received unknown TLLI"
610
Is "frequency of received unknown TLLI" above the threshold the SGSN can handle?
612
No
Yes
Is TLLI of type Local?
616
No (random or foreign)
Normal handling of unknown TLLI
614
Yes
Discard the UL-UNITDATA PDU 618

FIG. 6A

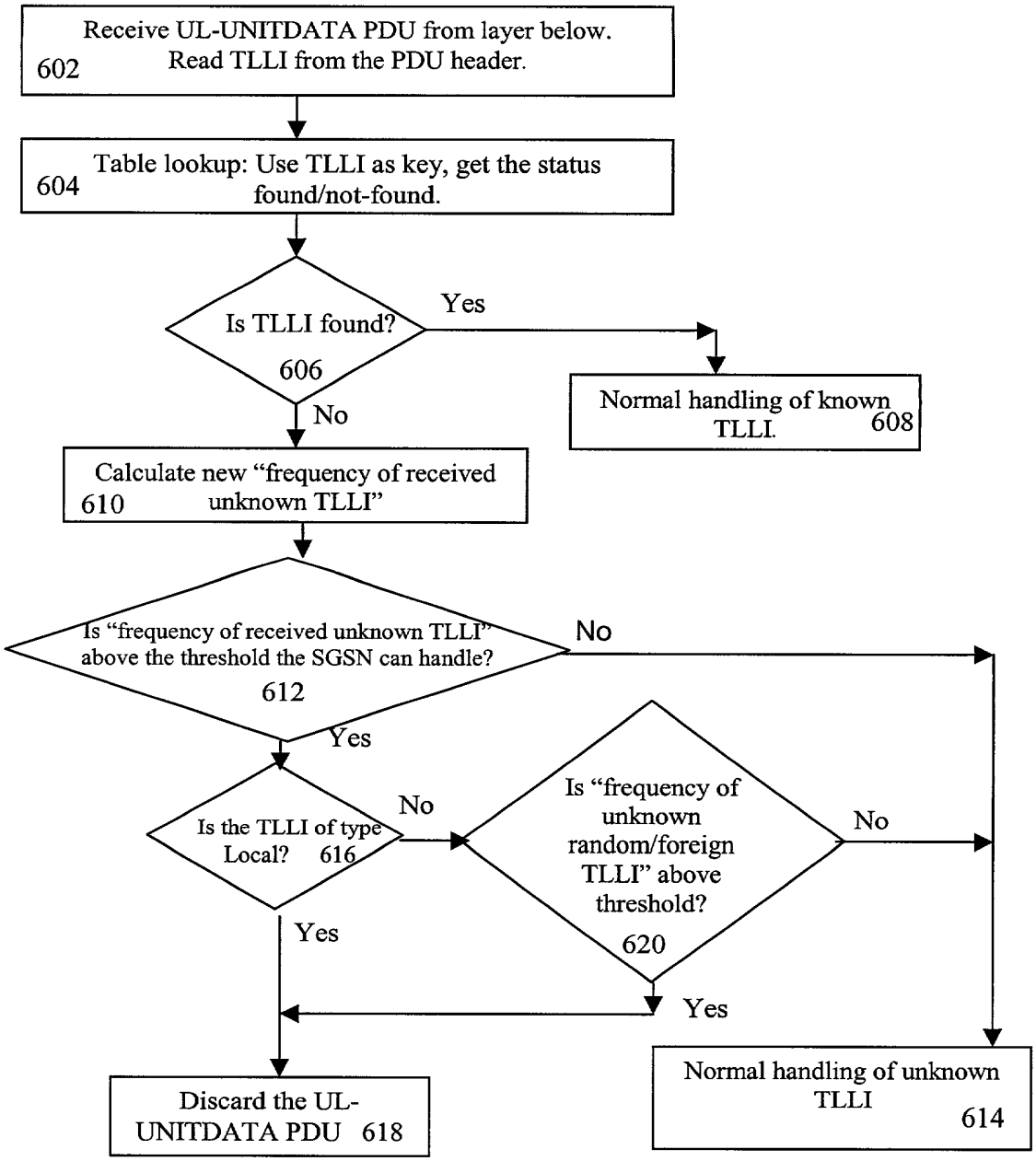

Receive UL-UNITDATA PDU from layer below.
602 Read TLLI from the PDU header.
Table lookup: Use TLLI as key, get the status
604 found/not-found.
Is TLLI found?
606
Yes
No
Normal handling of known TLLI. 608
Calculate new "frequency of received
610 unknown TLLI"
Is "frequency of received unknown TLLI" above the threshold the SGSN can handle?
612
No
Yes
Is the TLLI of type Local? 616
No
Is "frequency of unknown random/foreign TLLI" above threshold?
620
No
Yes
Yes
Discard the UL-UNITDATA PDU 618
Normal handling of unknown TLLI
614

FIG. 6B

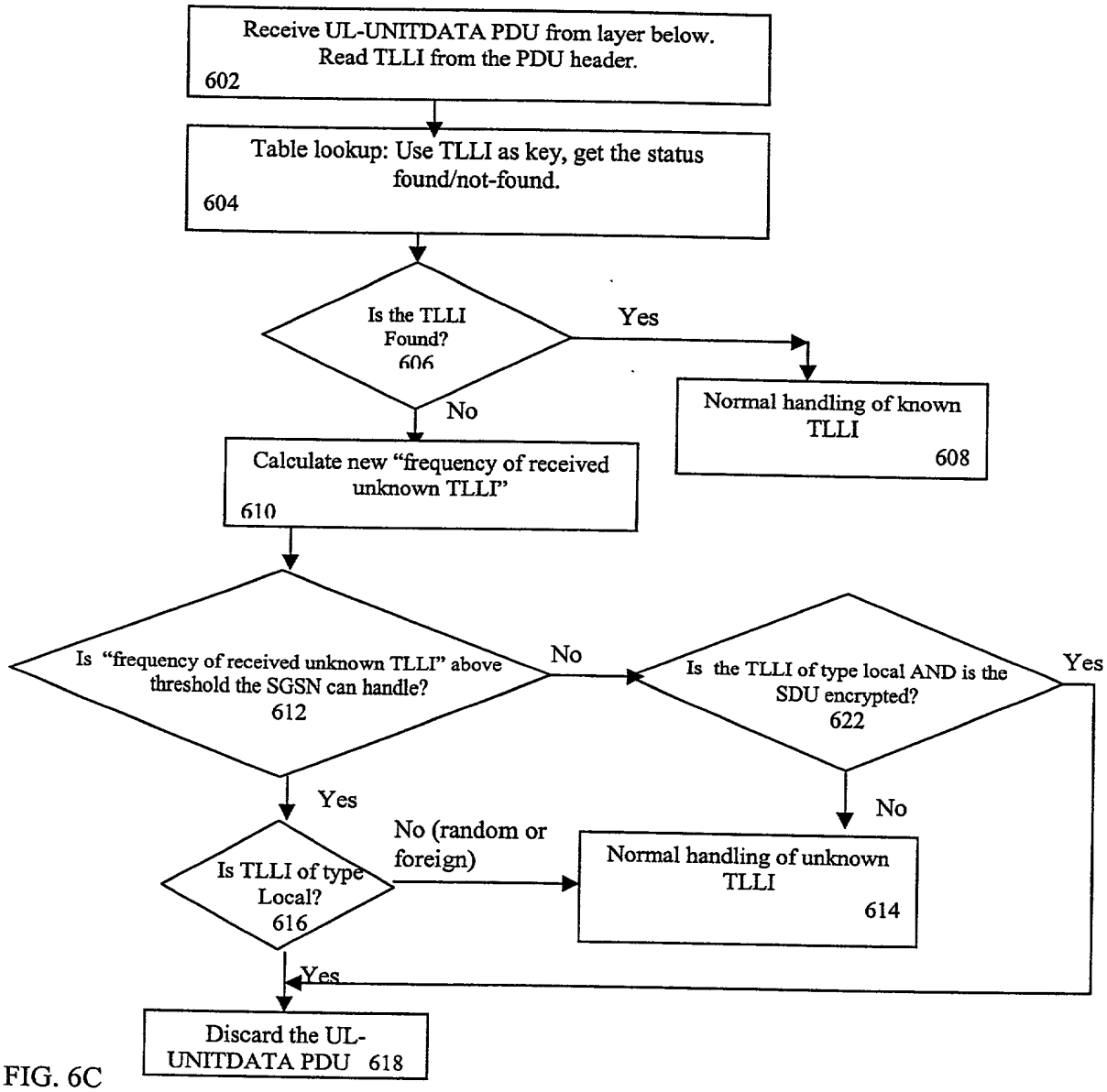

Receive UL-UNITDATA PDU from layer below. Read TLLI from the PDU header.
602
Table lookup: Use TLLI as key, get the status found/not-found.
604
Is the TLLI Found?
606
Yes
No
Normal handling of known TLLI
608
Calculate new "frequency of received unknown TLLI"
610
Is "frequency of received unknown TLLI" above threshold the SGSN can handle?
612
No
Is the TLLI of type local AND is the SDU encrypted?
622
Yes
No
Yes
Is TLLI of type Local?
616
No (random or foreign)
Normal handling of unknown TLLI
614
Yes
Discard the UL-UNITDATA PDU 618

FIG. 6C